Amendment to the Specification

[0060] Beginning with FIG. 14, a head 200 is illustrated that includes a transistor amplifier 201 formed adjacent to the read and write transducers. A pair of write leads 202 and 204 are connected to a coil, not shown, of an inductive transducer 210. A pair of sense leads 212 and 214 are connected to a MR transducer, which is disposed behind the inductive transducer and therefore not shown in this figure for clarity. Amplifier leads 215 and 217 extend adjacent to sense lead 214, and terminate at source electrode 220 and drain electrode 222, respectively. Sense lead 214 is connected to a gate electrode 225 that is disposed over a semiconductor region forming a gate for transistor 201. Source electrode 220 and drain electrode 222 are disposed over source and drain regions having opposite conductivity type to that of the gate. A mechanism such as a resistor is disposed in series with lead 214 distal to the MR transducer and optionally on the head, so that changing resistance in the MR transducer responsive to a signal from the media changes the voltage on gate electrode ~~215~~ 225. This change in voltage on the gate electrode may be amplified on the order of 100 times in the amplifier leads. Note that this simple example of a single transistor 201 may be supplanted by a CMOS transistor, known amplifier and/or detector circuits. Examples of detector circuits that may be formed on the head are described in U.S. Patents 5,546,027, 5,430,768 and 5,917,859, incorporated by reference herein, for which some electronics such as clock generators may be provided separately, for instance adjacent the load beam or actuator. Perhaps one thousand square microns of chip real estate may be available on the trailing edge of head 200 for formation of amplifier and/or detector circuits.

[0065] Alternatively, as shown in FIG. 18, the flexure 305 and gimbal 308 may have a different Z-height than both major surfaces of the head, so that the flexure and gimbal are flexible in the Z-direction as well as aligned with the Z-height of the center of mass of the head, reducing torque during seek and settle operations. The device in this example has a pair of pedestals 330 and 333 that have a similar Z-height as the surface of the head 303 facing away from the media, the pedestals being attached to a laminated load beam 335, which may contain stainless steel for strength and convenience. Instead of forming

separate pedestals for bonding to the load beam, the device may have a continuous plateau distal to the transducers for attachment to the load beam. An amplifier chip 340 is disposed on the load beam and electrically connected to the device and beam by wires ~~342~~ 357 and ~~344~~ 366, respectively. The load beam includes a lower layer 346 that is bonded to pedestals 330 and 333, and an upper layer 348 that extends over the head 303 in a loop 350, as seen in the top view of FIG. 19.

[**0067**] FIG. 20 shows a device 400 including a piezoelectric layer 404 that may be employed to help position the device. Much of device 400 is like device 30 shown in FIG. 1, and so for brevity substantially similar elements will not be renumbered or discussed at this point. Much as above, device 400 is formed on and from a wafer substrate, but prior to formation of head elements on a major surface 401 of the wafer, a conductive layer 408 is formed on a major surface 402 of the wafer. The conductive layer 408 may be formed of a metal or conductive ceramic that adheres well to the wafer and to the piezoelectric layer 404 that is formed atop the conductive layer. The piezoelectric layer 404 may be made of lead zirconium titanate (PZT) or other solid materials known to change shape in response to an electric field, a phenomenon known as electrostriction or the inverse piezoelectric effect, including ceramics such as barium titanate, many of which have a perovskite crystalline structure. Dielectrics such as alumina or silicon dioxide also exhibit a small amount of electrostriction, which may be sufficient to form actuators for certain applications, particularly if multiple thin (typically submicron layers are sandwiched between electrodes. For the situation in which the piezoelectric layer 404 is made of PZT, layer 404 may have a thickness in a range between less than a micron and more than ten microns, depending in part on the amount of positioning desired to be accomplished with the layer 404 and the voltage available to control that positioning.

[**0068**] For the case in which a material such as PZT is used to form layer 404, applying heat and an electric field may control the direction of the electrostrictive expansion or contraction of that layer during operation in response to an electric field. For example, the wafer and layers 404 and 408 may be heated to an elevated temperature, such as 700° C to over 1000° C, with an electric field provided between layer 408, which serves as a

first electrode, and a second electrode held adjacent a surface 410 of the piezoelectric layer 404, which may also provide heat for the annealing. An isolation layer may be provided on layer 404 to allow separation of the second electrode after annealing. Heat for annealing may optionally be provided by initially supplying an alternating electric field between the first and second electrodes. After cooling and cleaning the wafer, the head elements are formed on an opposite surface 401 of the wafer from layer 404, followed by separating the wafer into rows and working the rows to create the media-facing surfaces, heads, flexures and leads, much as described above.